Postdoctoral Fellowships for Research Training in Cancer

The International Agency for Research on Cancer (IARC) invites applications from junior scientists for training fellowships in those aspects of cancer research related to the agency's own program: epidemiology, biostatistics, environmental and viral carcinogenesis, cancer prevention, molecular cell biology, molecular genetics, biochemistry, immunology, molecular pathology, and mechanisms of carcinogenesis. Applications are encouraged from epidemiologists and laboratory scientists for interdisciplinary training that will facilitate the conduct of genetic and molecular epidemiologic research. Applicants requiring basic training in cancer epidemiology or laboratory research will also be considered.

In general, fellows will be selected from applicants with a recent Ph.D. or M.D. degree in medicine or the natural sciences, or who are in the final phase of completing their doctoral degree and wish to pursue a career in cancer research. Fellowships are awarded for one year and are tenable in any suitable institution abroad. Applicants must have an adequate knowledge of the working language of the host laboratory as well as the ability to write English at a level sufficient for scientific communication. Fellowships must be taken up by 31 December 2002 and cannot be started before the doctoral degree is formally obtained. Applications must be received by 31 December 2001.

Stipends will vary according to the cost of living in the country of study. The cost of travel for the applicant, and in certain circumstances that of one dependent, will be met.

Contact: IARC, Cancer Research Fellowship Programme, 150 cours Albert-Thomas, 69372 Lyon Cedex 08, France, +33-0-472-73-84-48, fax: +33-0-472-73-80-80, e-mail: fel@iarc.fr, Internet: http://www.iarc.fr/

Child Health Research Career Development Awards

The National Institute of Child Health and Human Development (NICHD) supports a program of Child Health Research Career Development Awards (CHRCDAs) intended to develop resources to speed the transfer of knowledge gained through studies in basic science to clinical applications that will benefit the health of children. The CHRCDAs will support research career development of pediatricians who have recently completed subspecialty training and who are commencing basic and/or clinical research relevant to child health. The goal of this initiative is to advance research in child health and to support educational institutions in their ability to stimulate novel research initiatives and career development experiences for junior investigators. This will be accomplished by increasing the number and effectiveness of established pediatric investigators who have a grounding in basic science and research skills that can be applied to the health problems of children, as well as by increasing the number of pediatric medical centers that can stimulate and facilitate the application of research findings to pressing pediatric problems.

A CHRCDA grant provides pediatric research institutions with an opportunity to build a greater capacity for nurturing junior investigators. Individuals with a wide range of biomedical and biobehavioral backgrounds, especially those with a basic science orientation, are asked to mentor newly trained pediatricians just embarking on their research careers. The established investigators make available their expertise, guidance, and laboratory facilities to be utilized by junior investigators for research projects that will enhance their basic science knowledge and skills. Although mentors from collaborating departments may provide expertise and resources, the emphasis remains on research that is relevant to clinical pediatrics and its various subspecialty areas.

Applications from institutions not previously funded for CHRCDAs are encouraged. A CHRCDA may be awarded to a children's hospital or to a department of pediatrics of an approved medical school in the United States that has as a primary teaching site either a general children's hospital or a children's program with an identifiable organizational structure that is part of a larger medical institution. Grantee institutions must have the clinical pediatric specialties and subspecialties, and the discrete clinical and research facilities sufficient to meet the purposes of the CHRCDA program, namely, to bridge clinical pediatric training with a career in basic and/or clinical research relevant to child health. CHRCDA scholars must have an M.D. degree or equivalent, must have completed a pediatric residency and subspecialty training, and must be within three years of completing their subspecialty training when starting the program. Scholars must be willing to spend 75% of full-time professional effort conducting research and research career development activities. Scholars must be U.S. citizens or noncitizen nationals, or must be able to provide legal proof of lawful admission for permanent residence. Individuals on temporary or student visas are not eligible.

This request for applications will use the NIH Mentored Clinical Scientist Development Program (K12) award mechanism. Responsibility for the planning, direction, and execution of the proposed program will be solely that of the applicant. The NICHD intends to commit approximately $3.2 million in total costs in fiscal year 2003 to fund up to eight new and/or competing continuation grants. Applicants may request a project period of up to five years and a budget of up to $400,000 for direct costs per year. It is not required that applications request the allowable budgetary maximum. Small size is not a disadvantage for CHRCDA funding, if the support requested for core resources (administration, shared core laboratory) is in proportion to the activity in new project development that is the CHRCDA's primary purpose.

The deadline for letters of intent is 25 January 2002, with final applications due 26 February 2002. Further information is available online at http://grants.nih.gov/grants/guide/rfa-files/RFA-HD-01-019.html. The PHS 398 research grant application instructions and forms (rev. 5/2001) at http://grants.nih.gov/grants/funding/phs398/phs398.html are to be used in applying for these grants. For further assistance call 301-435-0714 or e-mail GrantsInfo@nih.gov.

Contact: Karen K. Winer, Center for Research for Mothers and Children, NICHD, 6100 Executive Boulevard, Room 4B11, MSC 7510, Bethesda, MD 20892-7510 USA, 301-435-6877, fax: 301-480-9791, e-mail: winerk@exchange.nih.gov. Reference: RFA No. RFA-HD-01-019

Novel Biomarkers of Chronic Obstructive Pulmonary Disease (COPD)

The National Heart, Lung, and Blood Institute (NHLBI) invites applications for research grants to identify novel biomarkers of chronic obstructive pulmonary disease (COPD). COPD is a complex group of conditions associated with progressive airway obstruction for which no disease-modifying therapy is currently known. The purpose of this request for applications (RFA) is to promote the identification and characterization of biomarkers that might eventually be useful for studies of COPD pathogenesis, diagnosis, therapeutic stratification of patients, or testing of potential drug treatments. Such biomarkers might reflect the presence or severity of COPD, the rate of disease progression, or exacerbations of the disease. A variety of techniques might be employed, ranging from chemical assays of exhaled air condensate, to proteomic analysis of blood, to functional imaging of lungs by positron emission tomography. The focus of this RFA is on novel biomarkers for COPD that can be determined by minimally invasive means.

Proposed studies must involve characterizations of human subjects and must include individuals who have COPD. Studies of individuals with alpha-1 antitrypsin deficiency will be allowed. It is expected that studies will attempt to correlate particular biomarkers with specific aspects of COPD.

Measurements of multiple biomarkers in individual subjects and testing of multivariate correlations are encouraged. However, applicants should explain their rationale for the choice of each putative biomarker, clearly define the aspect of COPD that is hypothesized to be correlated with the biomarker, and justify the selection of the human subjects to be studied in the context of the underlying hypothesis. Plans for subject recruitment and characterization should be described in detail. The use of previously characterized cohorts of subjects is encouraged, particularly for studies attempting to correlate biomarkers with the rate of disease progression.

It is recognized that certain characterizations of human subjects that might be obtained through this RFA could also serve as phenotypes in studies testing associations of candidate gene polymorphisms with COPD. While it is not the intent of this RFA to support genetic studies, funds may be requested for the collection and storage of DNA specimens. Funds will not be provided for genotyping of study participants. Any applicant wishing to make use of this option must describe briefly the planned use of study data and DNA specimens, specify what costs for DNA collection and storage are included in the proposed budget, and obtain institutional review board approval for the collection and storage of these biological specimens.

The NHLBI intends to commit approximately $3.5 million in fiscal year 2002 to fund 8–10 new grants in response to this RFA. An applicant may request a project period of up to four years and a budget for direct costs of up to $350,000 per year.

The deadline for letters of intent is 25 January 2002, with final applications due 26 February 2002. This RFA will use the NIH Research Project (R01) award mechanism. Further information is available online at http://grants.nih.gov/grants/guide/rfa-files/RFA-HL-02-005.html.

Contact: Tom Croxton, Division of Lung Diseases, NHLBI, 6701 Rockledge Drive, Room 10208, MSC 7952, Bethesda, MD 20892-7952

USA, 301-435-0202, fax: 301-480-3557, e-mail: croxtont@nhlbi.nih.gov. Reference: RFA No. RFA-HL-02-005

Development of Novel Technologies for *in Vivo* Imaging

The National Cancer Institute (NCI) and the NIEHS invite applications for the development of novel image acquisition or enhancement methods, which may incorporate limited pilot or clinical feasibility evaluations using either preclinical models or clinical studies. This initiative is intended to facilitate the proof of feasibility and development of novel imaging technologies for early detection, screening, diagnosis, or image-guided treatment of cancer (NCI) and environmentally induced diseases (NIEHS), and to facilitate clinical evaluation studies of the development that are specifically limited to proof of concept. The National Institute of Biomedical Imaging and Bioengineering may accept assignments of grant applications that address development of novel imaging technologies that are not organ- or disease-specific.

The motivation for this program announcement (PA) is that current technologies for the molecular analysis of disease are largely restricted to *in vitro* methods and need to be extended to the *in vivo* situation. Furthermore, development of molecular probes or tracers for imaging molecular events in preclinical and clinical investigations is essential for detection of molecular changes *in vivo*. Development of innovative high-resolution imaging methods at the cellular or molecular scales is needed, with particular emphasis on identification and characterization of processes in the early formation of disease or early molecular changes during intervention or therapy. Integrations of these emerging molecular imaging methods with advances in traditional imaging methods are also required for more effective *in vivo* investigations of environmentally induced disease and cancer.

Specific emphasis of this PA is directed at 1) the development of highly innovative image acquisition and enhancement methods, including high risk/high gain research on technologies that exploit our knowledge of the molecular basis of cancer and environmentally induced diseases, and 2) the development of other novel imaging methods and the integration of these technologies with emerging molecular imaging methods, where appropriate, for more effective health care delivery. The following objectives would make appropriate topics for proposed projects. This list is not meant to be all-inclusive.

1) *Imaging to detect early changes:* Development of innovative high-resolution imaging methods at the cellular or molecular scales is encouraged, with a particular intent to identify and characterize premalignant abnormalities or early changes preceding the development of other diseases. Novel solutions for *in vivo* microscopic imaging systems or microscopic implanted devices with high spatial, contrast, and temporal resolution are encouraged. Similarly, developments of contrast enhancement methods and imaging probes are also encouraged. Proposed imaging methodologies that emphasize analysis of molecular events on the path to disease are encouraged.

2) *Large-scale screening applications for cancer and environmentally induced disease:* Development and optimization of efficient, low-cost imaging systems for rapid and automated large-scale screening with the intent of achieving significantly higher sensitivity and specificity for disease detection is encouraged. Applications could address significant innovative improvements to current imaging methods or new emerging imaging systems. Research topics of interest include technologies for molecular imaging, means to significantly reduce imaging time or motion effects, use of novel contrast agents or imaging probes, and use of technologies that do not involve ionizing radiation. System integration could include a variety of image processing techniques including temporal analysis of serial studies, close to real-time image processing, novel image display methods, and related imaging informatics and information reduction methods for more cost-effective solutions for screening.

3) *Imaging for diagnosis, staging, or monitoring the effects of therapy:* This initiative encourages the development of novel imaging methods such as functional or molecular imaging or spectroscopy methods that would significantly improve the specificity of diagnosis of cancer and environmentally induced disease, allow deterministic methods or patient-specific staging, or measure early effects of therapy. Examples of system integration would include image fusion or registration from the different modalities employed, development of software methods that would estimate the probability of malignancy or other specific disease identification, quantitative information for monitoring the effects of therapy, and close to real-time image analysis.

4) *Image-guided biopsy (IGB), image-guided therapy (IGT), and interventional procedures:* Novel approaches using imaging technologies are needed to significantly improve specificity, identify lesion extent and microscopic involvement, and minimize the tissue damage accompanying biopsy and therapy. Of particular interest are innovative approaches to IGB, IGT, or interventional methods that include novel imaging systems that provide information at the cellular or molecular level. Examples of system integration that are of interest include, but are not limited to, navigational systems, registration methods for several imaging modalities, real-time feedback mechanisms for controlling therapy, and methods that are adaptive or allow patient-specific optimization of treatment and computer-assisted surgery.

This PA will utilize the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) mechanisms, designed to encourage technology development by eligible small businesses. This PA must be read in conjunction with the current Omnibus Solicitation of the National Institutes of Health, Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Grant Applications (http://grants.nih.gov/grants/funding/sbirsttr1/index.pdf).

The deadlines for letters of intent are 11 February 2002 and 11 June 2002, with final applications due 18 March 2002 and 16 July 2002. More information on this PA is available online at http://grants.nih.gov/grants/guide/pa-files/PAR-01-102.html.

Contact: Houston Baker, Biomedical Imaging Program, NCI, 6130 Executive Plaza, Suite 6000, Bethesda, MD 20892-7412 USA, 301-496-9531, fax: 301-480-3507, e-mail: bakerhou@mail.nih.gov; Jerrold J. Heindel, Organs and Systems Toxicology Branch, Division of Extramural Research and Training, NIEHS, PO Box 12233, Research Triangle Park, NC 27709 USA, 919-541-0781, fax: 919-541-5064, e-mail: heindelj@niehs.nih.gov. Reference: PA No. PAR-01-102

Technologies for Closing DNA Sequence Gaps and Improving Methods for Obtaining the Sequence of Difficult-to-Sequence Regions

The National Human Genome Research Institute (NHGRI) invites applications to develop strategies and technologies for obtaining DNA sequence in the gaps that, due to limitations in available cloning and sequencing technology, will remain in essentially finished genomic sequence. Such gaps may arise from an inability to clone a region in any available vector system or to obtain sequence from all or part of an available clone. Such gaps have been encountered in every large genome sequencing effort to date. NHGRI encourages the development of novel approaches to allow completion of the DNA sequence within the gaps left by current sequencing methods and to improve the efficiency of sequencing in genomic regions that have proved difficult to sequence.

The large-scale sequencing centers have provided lists of clones containing regions with gaps or DNA that was difficult to sequence, posted at http://www.nhgri.nih.gov/About_NHGRI/Der/gapPA.html. Investigators applying for this program announcement (PA) may use this information to find clones on which they may develop and demonstrate their strategy/technology. This PA is limited to proposals to develop and obtain proof of principle for new technologies.

Approximately $2 million is available for funding, and 5–10 awards may be made during the first year of the program, contingent upon the availability of funds and receipt of a sufficient number of high-quality applications. The anticipated award dates are 1 April 2002 and 1 July 2002. This PA will be in effect for three years; additional announcements to continue this program may be issued in the future.

Applications are to be submitted on the grant application form PHS 398 (rev. 4/98) and submitted by the standard deadlines as indicated in the application kit. This form is available online at http://grants.nih.gov/grants/funding/phs398/phs398.html. Applicants planning to submit an investigator-initiated new (type 1), competing continuation (type 2), competing supplement, or any amended/revised version of the preceding grant application types requesting $500,000 or more in direct costs for any year must contact the institute program staff before submitting the application, i.e., as plans for the study are being developed. The applicant must also obtain agreement from the institute staff that the institute will accept the application for consideration, and identify, in a cover letter, the staff member and institute who agreed to accept assignment of the application. More information on this PA is available online at http://grants.nih.gov/grants/guide/pa-files/PAS-00-112.html.

Contact: Jane Peterson, NHGRI, 31 Center Drive, Room B2B07, Building 31, MSC 2033, Bethesda, MD 20892 USA, 301-496-7531, fax: 301-480-2770, e-mail: jane_peterson@nih.gov. Reference: PA No. PAS-00-112